

# Performance and robustness of tilapia-shrimp polyculture in Java (KB35-101-001)

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Background

**Outcomes (2023-2004)** 

Polyculture systems is claimed to be a game-changer for improving environmental sustainability and the pond farmers' production (Hossain et al., 2022; Knowler et al., 2020). However, polyculture systems are complex, where production performance is not only influenced by the pond inputs but also by species interactions (Thomas et al., 2021). Studies in polyculture are scarce, existing models mainly focus on single species. Thus, attempt to optimize polyculture system is challenging.

#### **Objective**

Develop a bioeconomic multispecies aquaculture model to predict and optimize the results of polyculture ponds, incorporating species interactions.

## Methods (1st sub-objective)





2023 Establish network 😋 eFishery **WMR**  Polyculture data and parameters • Develop bioeconomic multispecies model 1.0 2024 Publish bioeconomic multispecies model • Test the model with available farmer data from Indonesia

polyculture for tilapia-shrimp farmers

Assess economic stability of



#### Link to Theory of Change KB35

- Contribute to production stability for polyculture aquatic systems. The bioeconomic multispecies model is expected to be a reliable prediction tool when challenge with innovation and changes.
- Using knowledge of polyculture aquatic systems in the field to develop our model. Initiating collaboration with farmers and business' to improve the model and promote its use.

#### Theory of Change Food and Water Security



	Partners	(2023 - 24) Thematic areas	transitions to reach SDG2 (papers on) fram trans mult		frameworks a transitions tha multiple conte	nd strategies for food systems at can be scaled or adapted to exts	community within WUR and (inter) nationally
Core Team			Land and Water interfaces	Changing ro (informal) s	ole of stakeholders	Future scenarios and assessing trade-offs and	Synthesis <ul> <li>Synthesis and overview</li> </ul>
Wageningen University	Wageningen Research	(2023 - 24)	<ul> <li>Integrated aquatic food systems</li> </ul>	and rural-u     Food & Nu	rban linkages utrition	• Trade-offs and synergies	from papers, co-created products and stakeholder
Animal Breeding and Genomics	Wageningen Marine Research		<ul> <li>Strategies for dealing with salinisation &amp; drought in deltas</li> </ul>	groups in	or low-income rural-urban	<ul> <li>Modelling Food Systems across multiple scales</li> </ul>	<ul> <li>Active dialogues on adoption and co-creation</li> </ul>
Business Economics Group	<b>Diponegoro University</b>		<ul> <li>Nature Positive Food Systems</li> </ul>	Evidence I to include and inform	base on how midstream nal sector	<ul> <li>Develop "Food System 2100"</li> </ul>	Connection & co-funding
Wageningen Research	(Indonesia)	ASTAS DIADILS		actors • Improve ι	understanding		
Wageningen Livestock Research	Faculty of Fisheries and			of the role	e of consumers		
Wageningen Economic Research	Marine Resources	SEMARANG Preconditions	Just TransitionClimate Adaptation mainstreamedInteract withStrategic Partners				

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## References

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